

The US High Energy Physics activities are inherently international and inter agency.

Many of these activities require a worldwide-distributed computing system and dedicated data transfers. The largest of these activities currently involve approximately 100 sites. These sites include NSF and DOE funded US University groups and DOE facilities. These activities also include NASA and non-US sites experimental facilities, for example the LHC in Switzerland and Daya Bay in the PRC.

US scientists participate in these activities in the context of international collaborations, with equal data access for all collaboration members/ therefore, the distributed infrastructures used in the US must interoperate with those created by other significant international partners.

The US supports a program of research work allowing the construction of these kinds of systems. The program has included both networks and grid technology. Projects such as these have advanced the state of the art for constructing usable, large-scale federated systems.

1) Given future demand, the level of expertise required to form, build and operate these sorts of systems needs to be lowered, continued work is warranted, both on technology and operational methods.

2) The infrastructure developed by differing major international partner's needs to interoperate. Examples can be drawn from the Open Science Grid, which functions as part of the World Wide LHC Computing Grid; and Dice, which provides a forum for coordinating advanced network technology in the US, Canada and Europe.

3) Research on the business and social aspects of these kinds of federation is needed, for example, coordination of operations, and the level of organization of Scientific Virtual Organizations, for example Voss.

4) Operational frameworks and operational work are needed to provide practical, reliable inter-operating systems that crosscut across specialties. Informative examples include grid operating Organizations; efforts to connect campus networks To high speed wide area infrastructures; and resolve connectivity problems at end sites in an efficiently way

5) There is a need to make ensure that community written software is increasingly well crafted and well maintained. Informative existing work is the VDT work within the Open Science Grid. This area requires more development and expanded work. Similar efforts need to extend to the conception and generation of system notions and software.